

REMARKS

Claim Rejections - 35 U.S.C. §§ 102/103

The Examiner has rejected claims 1-2, 4-8, 10-14, 16, 21, 24, 26-29 and 31 under 35 U.S.C. § 102(b) as being anticipated by Ueno (US Patent 5,882,433). The Examiner has rejected claims 1-3, 6-9, 13-15, 17-19 and 25 under 35 U.S.C. § 102(b) as being anticipated by DE 19833197 (cited using US 6,431,184). The Examiner has rejected claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Ueno (US Patent No. 5,882,433). The Examiner has rejected claims 3, 9, 15, 17-20, 23, 25 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Ueno '433) in view of DE 19833197.

It is Applicant's understanding that the cited references fail to teach or render obvious Applicant's invention as claimed in claim 1-21, 23-26 and 28-31.

With respect to claims 1-6, Applicant teaches and claims a method of rinsing a wafer comprising spinning a wafer, and then exposing the spinning wafer to DI water "*while providing sonic waves to substantially the entire surface area of the wafer*", and then exposing the spinning wafer to a liquid or vapor having a low surface tension than water. As such, Applicant teaches and claims exposing the entire surface of the wafer to sonic waves while exposing to DI water. Applicant understands Taniyama (same as DE 198 33197A) as describing exposing on the radius of the wafer to an ultrasonic oscillator during rinsing (Col. 5, lines 61-66). Ueno fails to describe exposing the wafer to any type of ultrasonic energy during rinsing. As such, the cited references fail to teach or render obvious Applicant's invention as claimed in claims 1-6.

With respect to claims 7-12, Applicant teaches and claims a method of rinsing a wafer comprising spinning the wafer, and then exposing the frontside of the spinning wafer to DI water; and then after exposing the spinning wafer to DI water, exposing the spinning wafer to

a liquid or vapor having a lower surface tension than water “*while applying acoustic waves to said wafer*”. That is, Applicant teaches and claims to apply acoustic waves while exposing the spinning wafer to a vapor or solution having a lower surface tension than water. The Reference DE 198 33 197A/Taniyama only describes applying acoustic energy while washing and rinsing the wafer. The Reference DE 198 33 197A/Taniyama fails to describe applying acoustic energy while exposing the wafer to a liquid or vapor, such as isopropyl alcohol while applying acoustic waves to the wafer. Ueno fails to describe applying acoustic energy at anytime. As such, the combination of references fails to teach or render obvious Applicant’s invention as claimed in claims 7-12.

With respect to claims 13-16, Applicant teaches and claims a method of rinsing a wafer comprising spinning a wafer having a frontside and a backside, and then exposing the frontside and backside of the spinning wafer to DI water; and after exposing the spinning wafer to DI water, blowing a gas at the center of the frontside of the wafer while said wafer is spinning. That is, Applicant teaches and claims a method of rinsing a wafer wherein both the frontside and backside are exposed to DI water while rinsing the wafer. Ueno describes a method of rinsing a wafer where only the frontside of the wafer is exposed to DI water. Similarly, Reference DE 198 33 197A/Taniyama also describes only exposing the frontside of the wafer to rinsing water. As such, the cited references either alone or in combination fail to teach or render obvious Applicant’s invention as claim 13-16.

With respect to claims 17-20, Applicant teaches and claims a method of rinsing a wafer comprising spinning a wafer having a frontside and backside, and then exposing the frontside of said spinning wafer to DI water and while exposing spinning wafer to DI water, applying “*acoustic waves to said backside of said spinning wafer*”. Applicant understands Reference DE 198 33 197A with respect to Taniyama as describing applying acoustic energies to the frontside of the wafer. Ueno fails to describe the use of any ultrasonic energy at all during the rinsing of a wafer. As such, for the above mentioned reasons, it is

Applicant's understanding that cited references fail to teach or render obvious Applicant's invention as claimed in claims 17-20.

With respect to claims 21, 23 and 24, Applicant teaches and claims a method of rinsing a wafer comprising spinning a wafer and then exposing the spinning wafer to DI water which has been heated "*to a temperature between 60-70°C*". It is Applicant's understanding that Ueno describes a process wherein the DI water is heated to 30°C. Ueno fails to describe heating the rinse water to a temperature between 60-70°C as claimed by Applicant. As such, it is Applicant's understanding that the cited references fail to teach or render obvious Applicant's invention as claimed in claim 21, 23 and 24.

With respect to claim 25, Applicant teaches and claims a method of rinsing a wafer having a top surface and a bottom surface comprising spinning the wafer, exposing the top surface of the wafer to DI water heated to a temperature greater than room temperature, and while exposing the spinning wafer to heated DI water, applying acoustic waves to the spinning wafer "*from a plate positioned beneath said bottom surface of said spinning wafer*". Reference DE 198 33 197A/Taniyama describes applying ultrasonic waves from the top surface of the wafer and not from the bottom surface as claimed by Applicant. Ueno fails to describe applying any sort of ultrasonic energy. As such, it is Applicant's understanding that the cited references clearly fail to teach or render obvious Applicant's invention as claimed in claim 15.

With respect to claims 26-31, Applicant teaches and claims a method of cleaning a wafer comprising spinning the wafer at a first rotation rate and exposing the spinning wafer to an etchant or cleaning chemicals, and then rinsing the cleaning chemicals or said etchant from the wafer with a rinsing method which includes spinning the wafer at a second rotation rate, "*wherein said second rotation rate is faster than said first rotation rate*" and dispensing DI water onto said spinning wafer at said second rotation rate. Applicant understands Ueno as describing exposing the wafer to cleaning chemicals at a 300 rpm and also rinsing the wafer at 300 rpm. As such, Ueno fails to teach utilizing different rotation

rates for exposing to chemicals and for rinsing the chemicals as claimed by Applicant. As such, Ueno fails to teach Applicant's invention as claimed in claims 26-31.

For the above mentioned reasons, it is Applicant's understanding that the cited references clearly fail to teach or render obvious Applicant's invention as claimed in claims 1-21, 23-26 and 28-31. Applicant, therefore, respectfully requests the removal of the 35 U.S.C. 102 and 103 rejections of claims 1-21, 23-26 and 28-31 and seeks an early allowance of these claims.